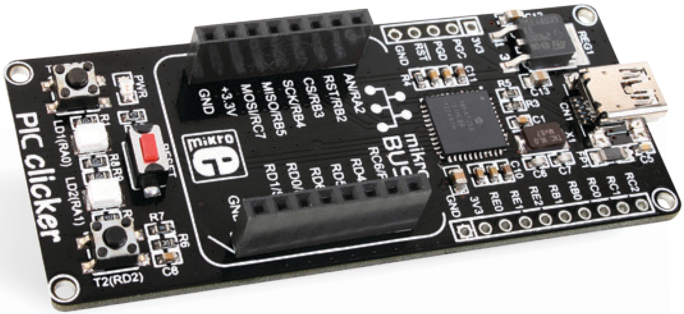


PIC clicker

A compact starter kit with your favorite microcontroller and a socket for Click add-on boards. New ideas are just a click away.

MikroElektronika
DEVELOPMENT TOOLS | COMPILERS | BOOKS

TO OUR VALUED CUSTOMERS

I want to express my thanks to you for being interested in our products and for having confidence in MikroElektronika.

The primary aim of our company is to design and produce high quality electronic products and to constantly improve the performance thereof in order to better suit your needs.



Nebojsa Matic
General Manager

Table of Contents

1. What is PIC clicker?

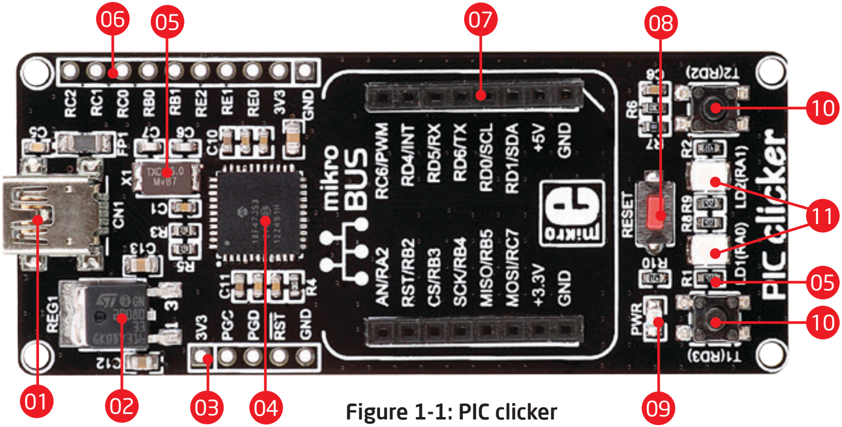


Figure 1-1: PIC clicker

- 01 USB MINI-B connector
- 02 3.3V Voltage regulator
- 03 mikroProg™ Programmer connector
- 04 44-pin PIC18F47J53 microcontroller
- 05 16 MHz crystal oscillator
- 06 Connection pads
- 07 mikroBUS™ socket
- 08 RESET button
- 09 Power indication LED
- 10 Additional button
- 11 Additional LEDs

PIC clicker is an amazingly compact starter development kit which brings innovative mikroBUS™ host socket to your favorite microcontroller. It features **PIC18F47J53**, 8-bit microcontroller, two indication LEDs, two general purpose buttons, reset button, USB MINI-B connector and a single mikroBUS™ host socket. mikroProg connector and pads for interfacing with external electronics are provided as well. mikroBUS™ host connector consists of two 1x8 female headers with **SPI**, **I²C**, **UART**, **RST**, **PWM**, **Analog** and **Interrupt** lines as well as **3.3V**, **5V** and **GND** power lines. **PIC clicker** board can be powered over USB cable. On-board power circuitry generates 3.3V and 5V. Power diode (GREEN) indicates the presence of power supply.

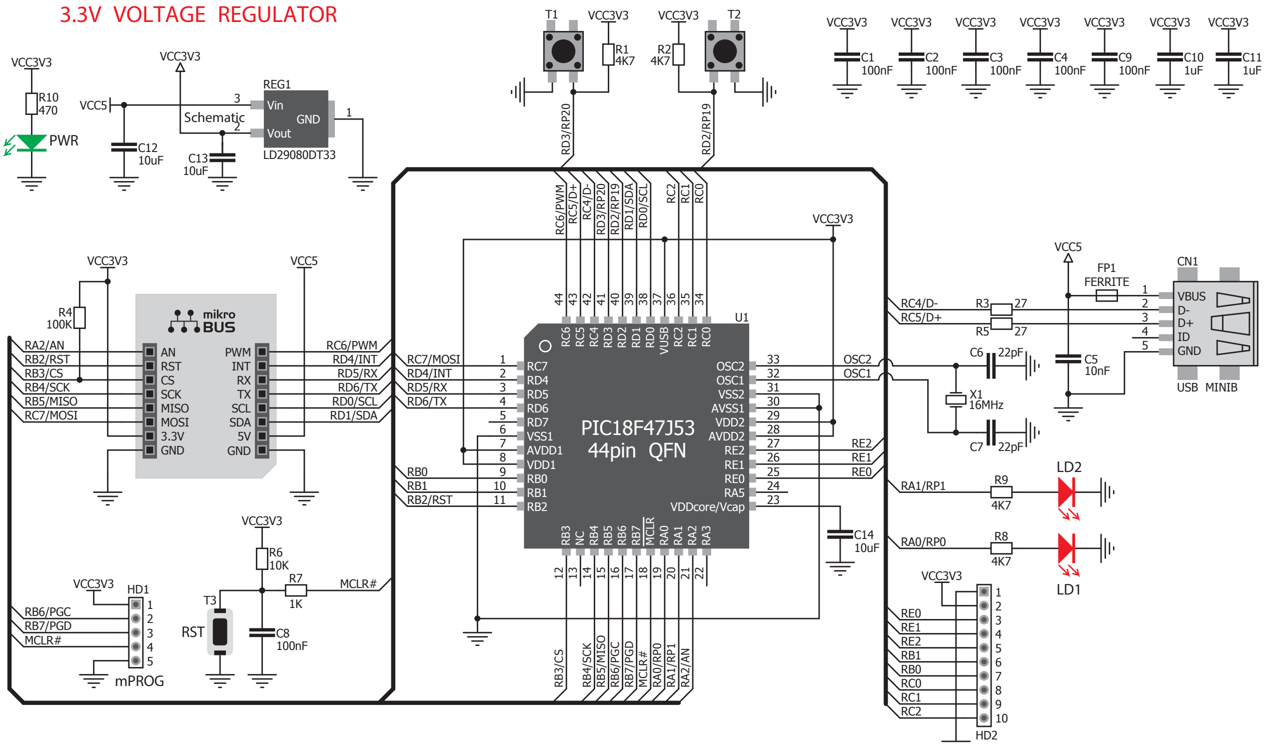


Figure 1-2: PIC clicker schematic

2. Power supply

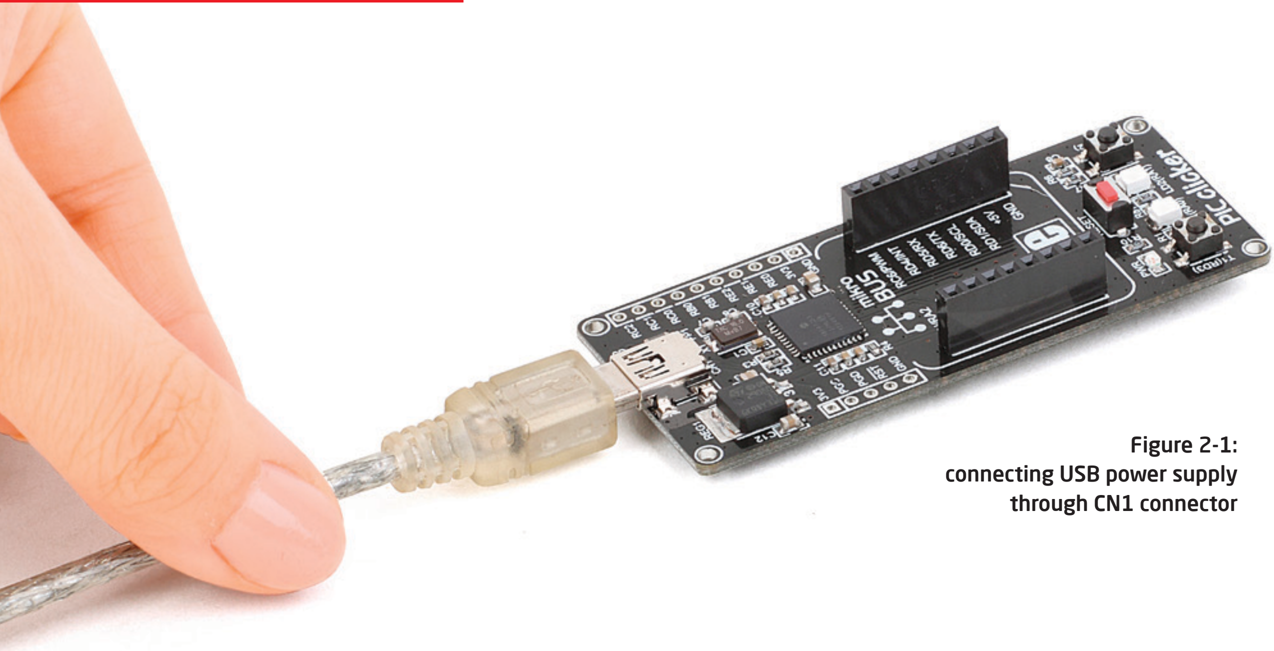


Figure 2-1: connecting USB power supply through CN1 connector

When the board is powered up the power indication LED will be automatically turned on. The USB connection can provide up to 500mA of current which is more than enough for the operation of all on-board and additional modules.

3.3V VOLTAGE REGULATOR

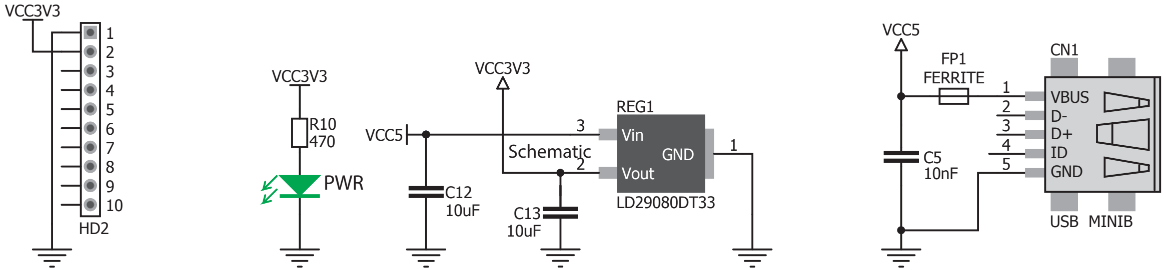
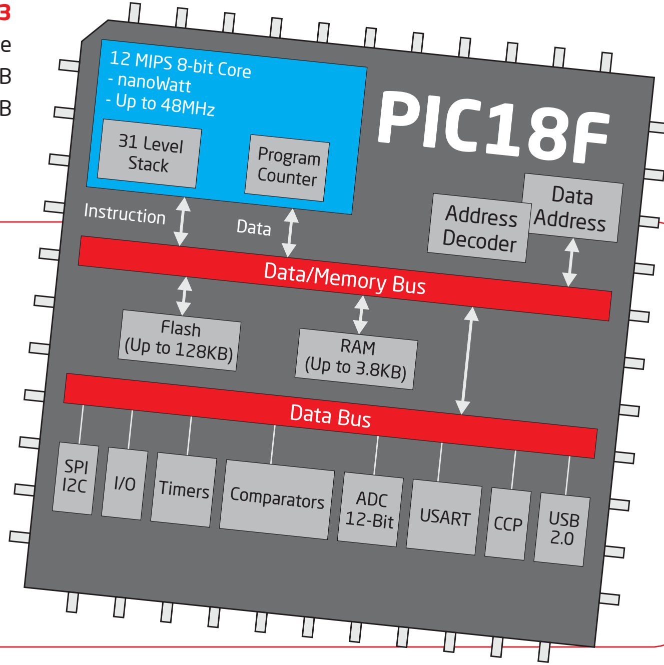


Figure 2-2: Power supply schematic

3. PIC18F47J53 microcontroller

The PIC clicker development tool comes with the **PIC18F47J53** microcontroller. This 8-bit low power and high performance microcontroller is rich with on-chip peripherals and features 128KB of Flash and 3,800 Bytes of RAM. It has integrated full speed USB 2.0. support.



Key microcontroller features

- Up to **12 MIPS** Operation
- 8-bit architecture
- 128KB of Flash memory
- 3,800 bytes of RAM
- 44 pin TQFP
- 13 ch, 12-bit ADC
- USB 2.0, UART, SPI, I²C, etc.

4. Programming the microcontroller

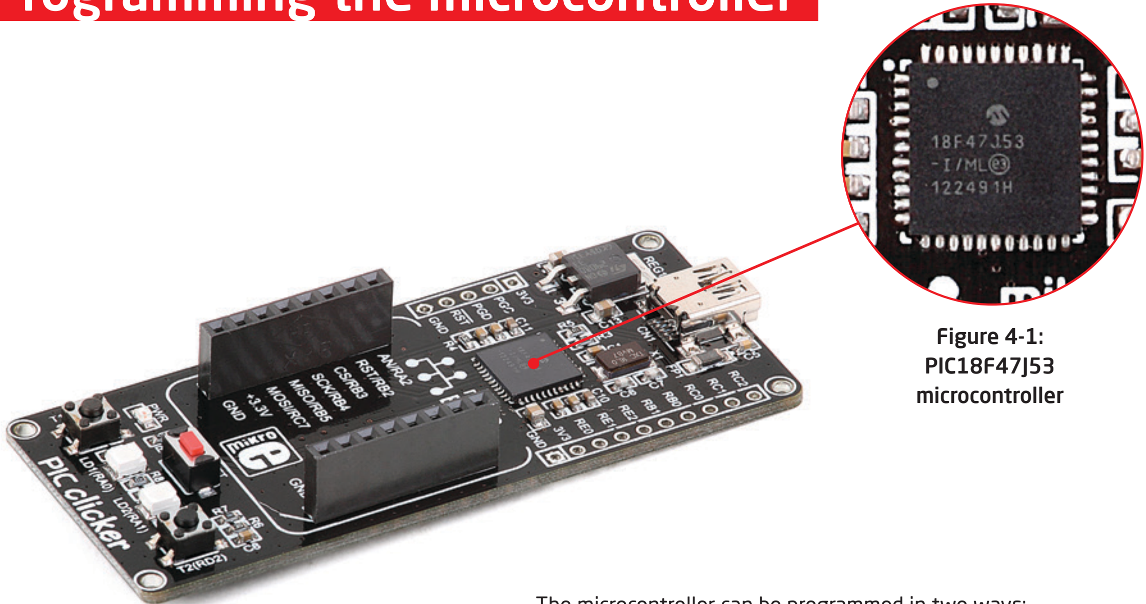


Figure 4-1: PIC18F47J53 microcontroller

The microcontroller can be programmed in two ways:

01 Using USB HID mikroBootloader,

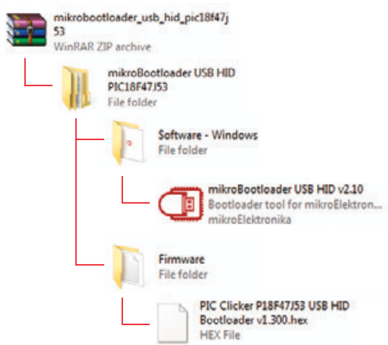
02 Using external mikroProg™ for PIC®, dsPIC®, PIC32® programmer.

Programming with mikroBootloader

You can program the microcontroller with bootloader which is preprogrammed by default. To transfer .hex file from a PC to MCU you need bootloader software (**mikroBootloader USB HID**) which can be downloaded from:

http://www.mikroe.com/downloads/get/2039/mikrobootloader_usb_hid_pic18f47j53.zip

After the mikroBootloader software is downloaded, unzip it to desired location and start it.



step 1 - Connecting PIC clicker



Figure 4-2: USB HID mikroBootloader window

01 To start, connect the USB cable, or if already connected press the **Reset** button on your PIC clicker. Click the **Connect** button within 5s to enter the bootloader mode, otherwise existing microcontroller program will execute.

step 2 - Browsing for .HEX file



Figure 4-3: Browse for HEX

01 Click the **Browse for HEX** button and from a pop-up window (**Figure 3.4**) choose the .HEX file which will be uploaded to MCU memory.

step 3 - Selecting .HEX file

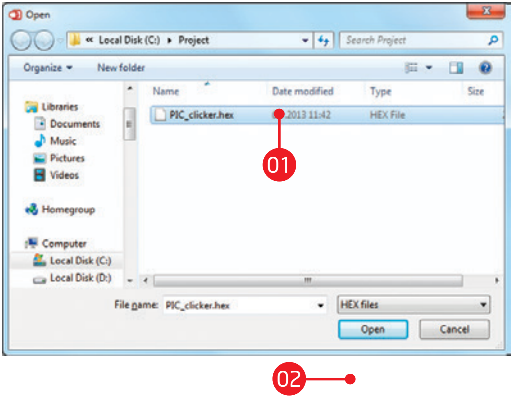


Figure 4-4: Selecting HEX

01 Select .HEX file using open dialog window.

02 Click the **Open** button.

step 4 – Uploading .HEX file



Figure 4-5: Begin uploading



Figure 4-6: Progress bar

01 To start .HEX file bootloading click the **Begin uploading** button.

01 Progress bar enables you to monitor .HEX file uploading.

step 5 - Finish upload



Figure 4-7: Restarting MCU



Figure 4-8: mikroBootloader ready for next job

01 Click **OK** button after the uploading process is finished.

02 Press **Reset** button on PIC clicker board and wait for 5 seconds. Your program will run automatically.

Programming with mikroProg™ programmer

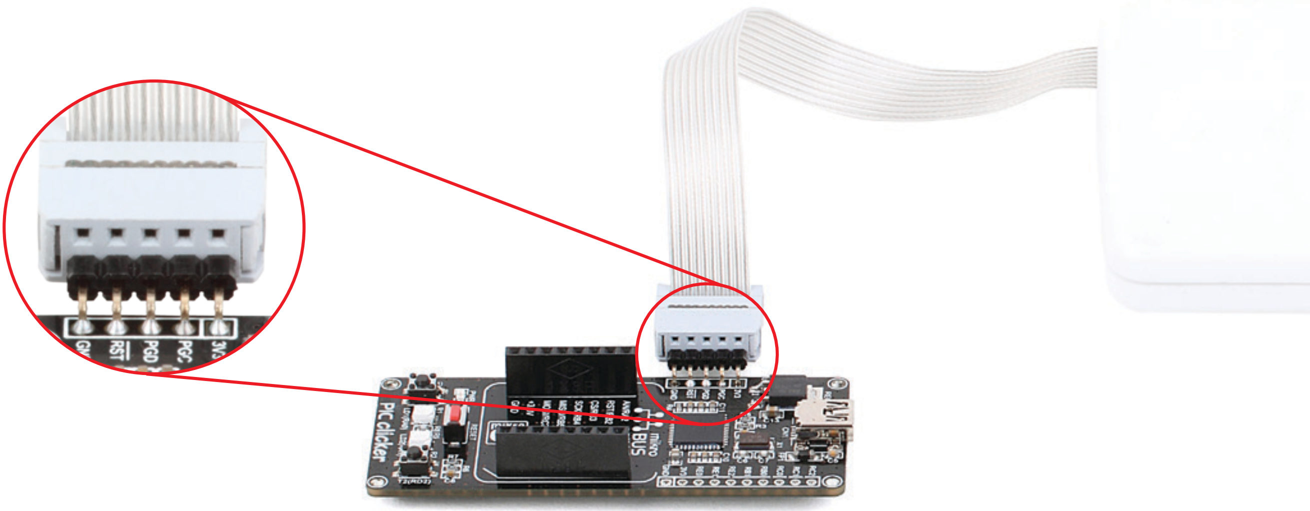


Figure 4-9: mikroProg™ connector

The microcontroller can be programmed with external **mikroProg™ for PIC®, dsPIC® and PIC32® programmer** and **mikroProg Suite™ for PIC® software**. The external programmer is connected to the development system via 1x5 mikroProg™ connector, **Figure 4-9.** **mikroProg™** is a fast USB 2.0 programmer with hardware debugger support. It supports PIC10®, PIC12®, PIC16®, PIC18®, dsPIC30/33®, PIC24® and PIC32® devices from Microchip®. Outstanding performance, easy operation and elegant design are it's key features.

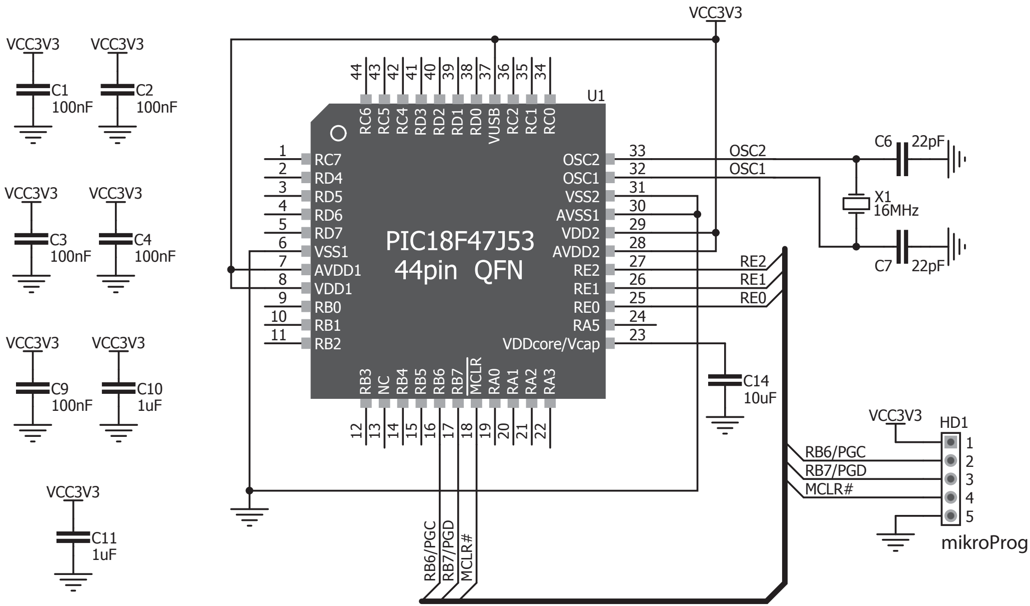
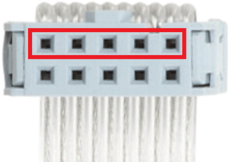


Figure 4-10: mikroProg™ connection schematic

note *Make sure to use only the front row of mikroProg's IDC10 connector (side with a knob and incision) when connecting it to 1x5 header on your PIC clicker board.*



5. mikroProg Suite™ for PIC® Software

The **mikroProg™** programmer requires special programming software called **mikroProg Suite™ for PIC®**. It can be used for programming all Microchip® microcontroller families, including PIC10®, PIC12®, PIC16®, PIC18®, dsPIC30/33®, PIC24® and PIC32®. The software has intuitive interface and SingleClick™ programming technology. Just download the latest version of **mikroProg Suite™** and your programmer is ready to program new devices. **mikroProg Suite™** is updated regularly, at least four times a year, so your programmer will be more and more powerful with each new release.

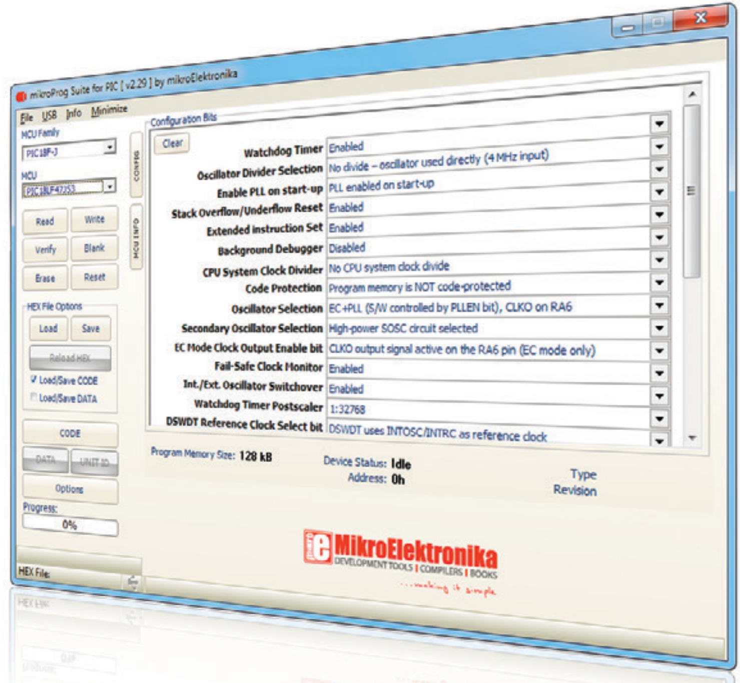
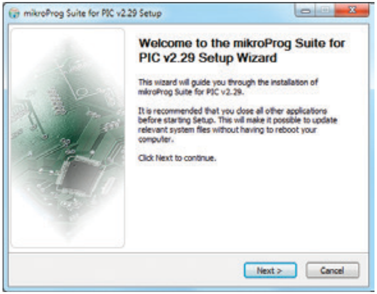
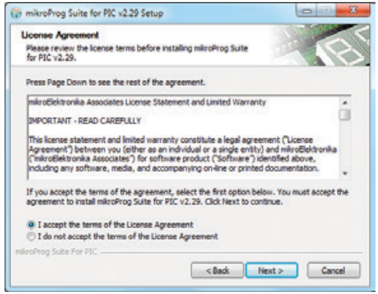


Figure 5-1: Main window of mikroProg Suite™ for PIC® programming software

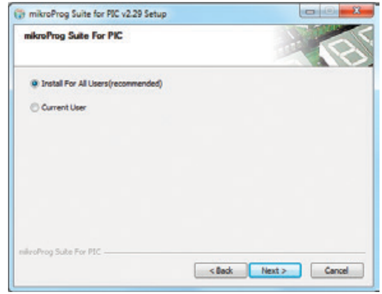
Software Installation Wizard



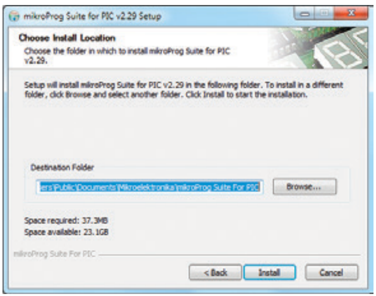
01 Start Installation



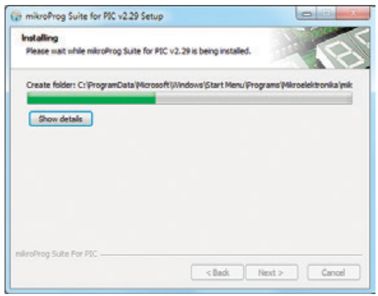
02 Accept EULA and continue



03 Install for all users



04 Choose destination folder



05 Installation in progress



06 Finish installation

6. Buttons and LEDs

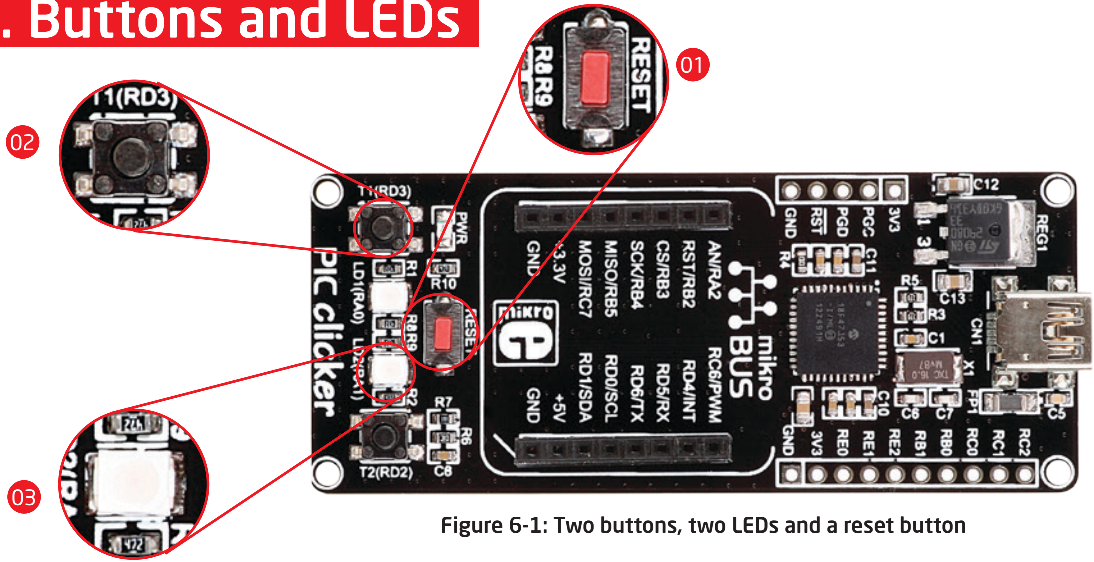


Figure 6-1: Two buttons, two LEDs and a reset button

The board also contains 01 **reset button** and a pair of 02 **buttons** and 03 **LEDs**. Each of these additional peripheral are located in the bottom area of the board. **Reset button** is used to manually reset the microcontroller. Pressing the reset button will generate low voltage level on microcontroller reset pin. **LEDs** can be used for visual indication of the logic state on two pins (**RA0** and **RA1**). An active LED indicates that a logic high (1) is present on the pin. Pressing any of these **buttons** can change the logic state of the microcontroller pins (**RD2** and **RD3**) from logic high (1) to logic low (0).

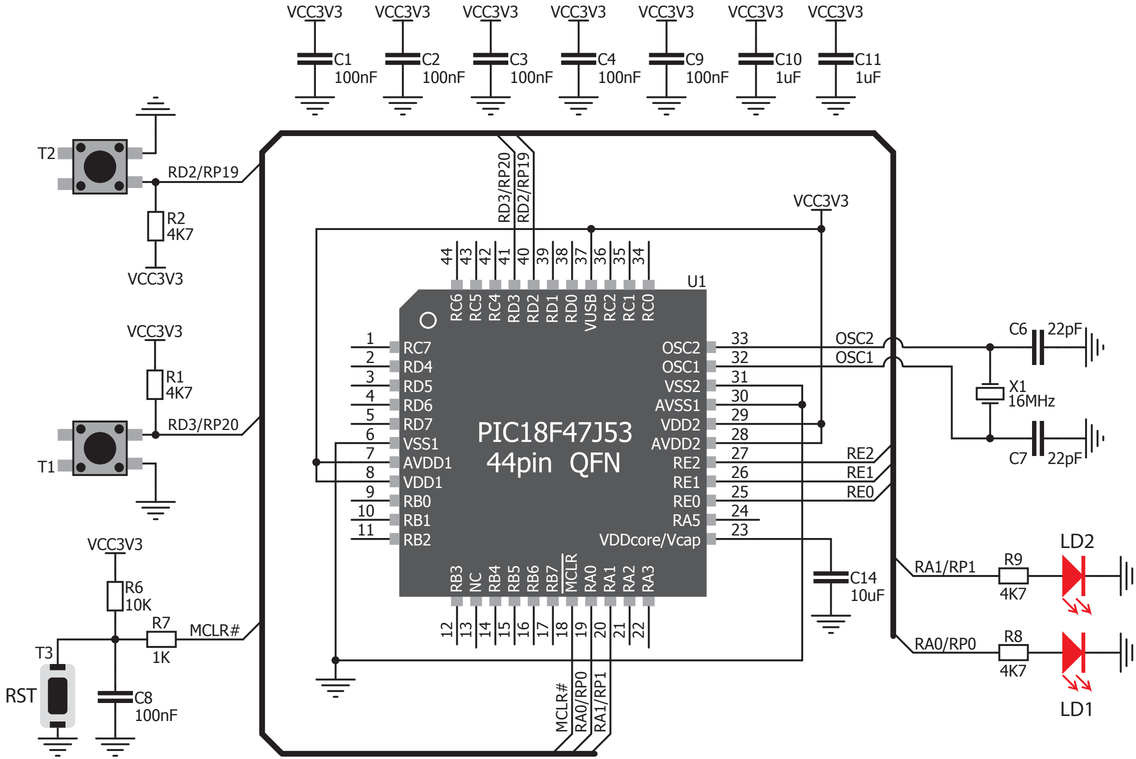


Figure 6-2: Other modules connection schematic

7. Click boards are plug and play!

Up to now, MikroElektronika has released more than 70 mikroBUS™ compatible **Click Boards™**. On the average, one click board is released per week. It is our intention to provide you with as many add-on boards as possible, so you will be able to expand your development board with additional functionality. Each board comes with a set of working example codes. Please visit the Click boards™ webpage for the complete list of currently available boards:

http://www.mikroe.com/click/

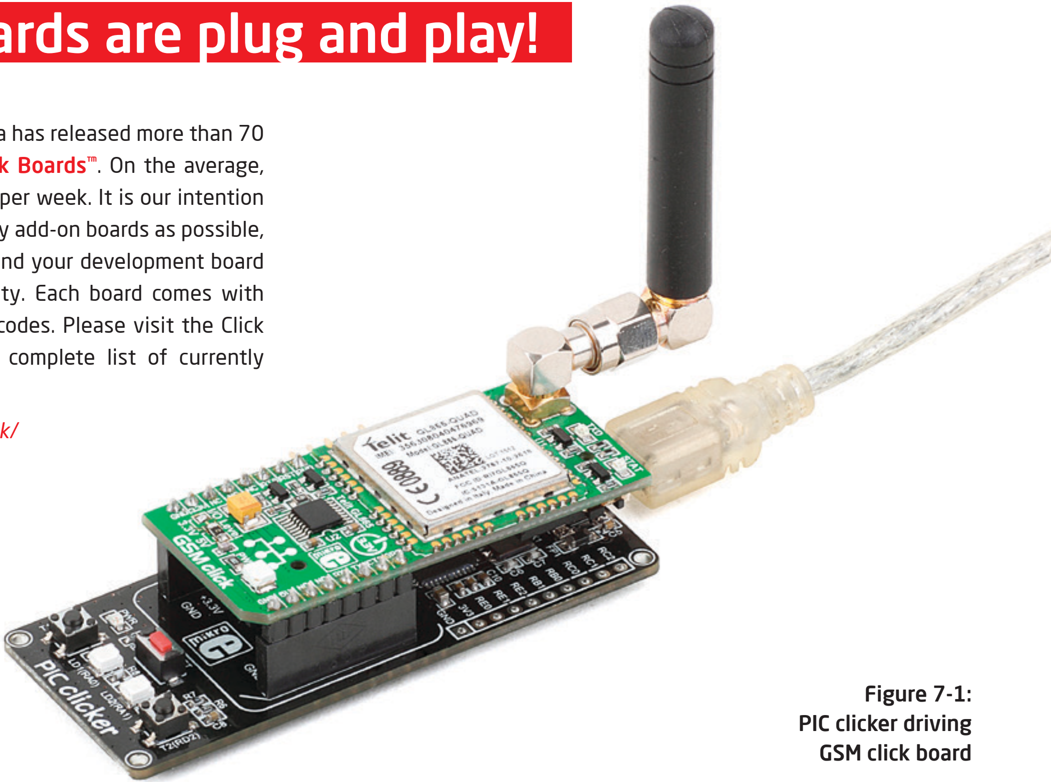
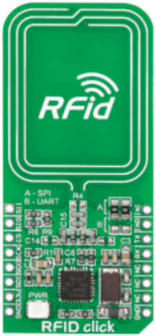
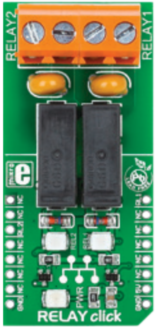


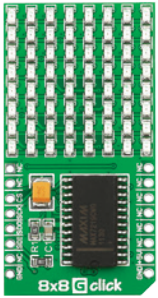
Figure 7-1: PIC clicker driving GSM click board



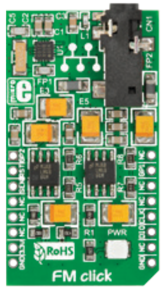
RFid click™



Relay click™



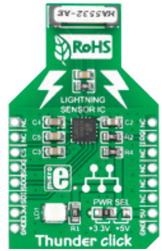
8x8 click™



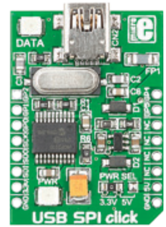
FM click™



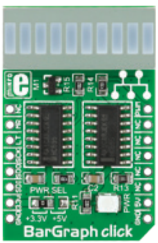
Bluetooth2 click™



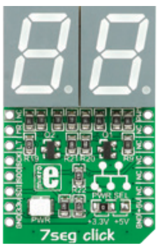
Thunder click™



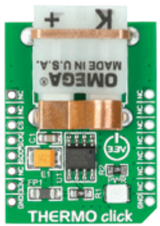
USB SPI click™



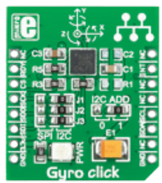
BarGraph click™



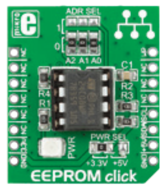
7seg click™



THERMO click™



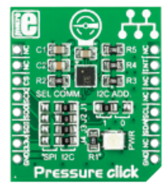
Gyro click™



EEPROM click™

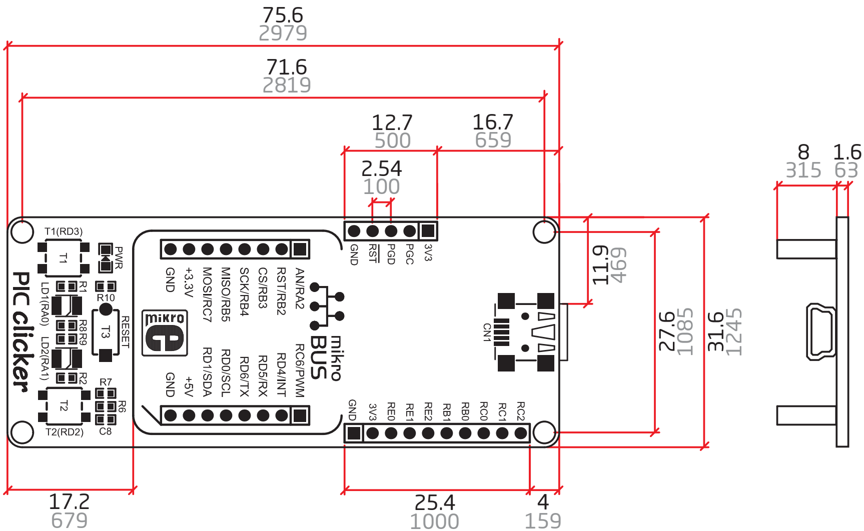


LightHz click™



Pressure click™

8. Dimensions



Legend

mm

mils

Mounting hole size

⌀2 mm

⌀79 mils

If you want to learn more about our products, please visit our web site at www.mikroe.com

If you are experiencing some problems with any of our products or just need additional information, please place your ticket at www.mikroe.com/support

If you have any questions, comments or business proposals, do not hesitate to contact us at office@mikroe.com

PIC clicker Manual
ver. 1.01

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